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Journal of the Society of Arts.

FRIDAY, JANUARY 8, 1858.

COUNCIL.

The following gentlemen have been unanimously chosen to fill the vacancies in the Council:

Thomas Dyke Acland.
Dr. Thomas King Chambers.
Thomas Sopwith, F.R.S.
Sir Thomas Phillips.

EXAMINATIONS.—NOTICE TO INSTITUTIONS.

No person who shall not have been for three months previously a member of, or student of, a class in an Institution in union with this Society, can be admitted to the Final Examinations. Moreover, to bring the Examinations within reach of the Members of *Incipient* Institutes and small Evening Classes for Adult Instruction, which cannot afford to pay two guineas for union with the Society of Arts, any Provincial Union or Association, or Local Board for the promotion of Adult Instruction, may unite with itself any number of such incipient Institutions and Small Evening Classes in its district, and give to the whole of them, but *not to fully developed Institutes*, the privileges of Union with the Society of Arts in respect of the Examinations, for a single annual payment of Two Guineas.

EXAMINATIONS AND LOCAL BOARDS.

The following letter has been received from the Mayor of Sheffield:—

“Sheffield, 31st December, 1857.

“SIR,—I beg to refer you to my last, of the 22nd instant, and have now the pleasure to hand you a report of the proceedings of the meeting therein mentioned, and remain,

“Sir, yours obediently,

“ROBERT JACKSON (Mayor).”

THE MAYOR'S ROOM, COUNCIL HALL, SHEFFIELD,
26TH DECEMBER, 1857.

At a meeting of the Educational Institutions (called by the Mayor), and held on Saturday evening, the 26th December, 1857. Present: His Worship the Mayor (in the chair), and deputations from the Church of England Educational Institute, the Working Men's College, the Mechanics' Institute, and the People's College.

It was unanimously resolved, “That two Members of each of the Institutions connected with the Society of Arts in Sheffield form themselves into a joint Committee to carry out the Examinations proposed by the Council of the Society of Arts.”

It was further resolved, “That a copy of the above resolution be sent to each of the Institutions here represented.”

A vote of thanks was also passed to the Mayor, for his kindness in calling and presiding at this meeting.

COPYRIGHT IN FINE ART.

The following letter has been circulated by the Committee:—

“Society of Arts, Manufactures, and Commerce,
“Adelphi, London, W.C.,
“2nd January, 1858.

“SIR,—A Committee, consisting of the gentlemen whose names are given on the other side,* has been formed by this Society, for the purpose of considering and reporting on the state of the law relating to copyright in works of Fine Art, with a view to obtaining an amendment of it, and I am instructed to lay before you the following resolution, which has been passed:—

“Resolved—That the inquiries of this Committee be directed—

“1st. To ascertain the existing laws of British artistic copyright, and the chief defects of those laws.

“2nd. How those defects affect the interests of producers of works of Art.

“3rd. How they affect the interests of purchasers of works of modern Art.

“4th. How they affect the interests of the public and the promotion of the Fine Arts.

“5th. How they affect the subjects of those Foreign States with whom Her Majesty has entered into international copyright conventions; and what the laws of those States are as affecting artistic copyright.

“6th. To obtain instances of fraudulent or wrongful acts relating to works of modern Art.

“7th. And lastly, to suggest such remedies as appear best calculated to amend the defects of our artistic copyright laws.

“The Committee direct me to call your attention specially to No. 6, in the hope that they may be favoured with the details of such instances as have come within your own experience. The Committee will be glad to receive full and distinct answers on this point. The other points are made known to you solely with a view of showing to what objects the Committee are directing their attention.

“In any instances which you may be able to send to the Committee, the names of individuals may be omitted, if so desired.

“I am, Sir,

“Your obedient servant,

“P. LE NEVE FOSTER,
“Secretary.”

THE SEWAGE OF LONDON.

By HENRY ALLNUTT.

“It is impossible for any man with the slightest faith in human contrivance to believe that sewage, containing products that are annually worth not less than £1,000,000 sterling, are ultimately destined to be wasted, while the works we construct for the purpose of throwing it away are a 50 years' debt on the metropolis of a people whose mechanical genius is as remarkable as their wealth is unlimited.”—*The Times*, Nov. 17, 1857.

In the *Times* report of the meeting of the Metropolitan Board of Works, on the 23rd November last, Mr. John Leslie (one of the members), alluding to the fact, “that in the proposed scheme for the drainage of London, every one of the sewers would have storm overflows to convey heavy rain-falls to the Thames,” said, that this of itself opened the whole question which the Board would sooner or later have to act upon, viz., the separation of the sewage from the rain-fall.

Having carefully examined the Report and Appendix of the Metropolitan Drainage, since the printing of my paper,† dated the 12th November last, I feel convinced that it is perfectly impossible the London sewage can be

* The list of names was published in last week's *Journal*, p. 91.

† See present volume, p. 44.

utilised diluted as it is to its present enormous extent; therefore, while agreeing with Mr. John Leslie in his remarks above quoted, I think we must not stop at the mere removal or separation of the rain-fall, but proceed further, and separate about 17-18ths of the water now considered sewage, from that which is really the offensive portion.

I particularly wish to draw attention to the fact, that as the area of London is covered with buildings, the storm overflows must be more frequent; when the drainage of London is more complete, and the area, instead of being 60 square miles (the present extent), becomes 117 square miles (the area adopted by Mr. Bazalgette), a

rain-fall of even 0.05 of an inch, may then prove a storm overflow. As the area is covered with roofs, or the ground paved, the absorption and evaporation will be reduced to a minimum, and therefore we may justly anticipate that an overflow of rain water (from the sewers into the Thames) will occur on so many days in the year that it will materially affect the river, bringing it back almost to its present state of impurity.

TABLE showing the amount of tons or gallons of water in a rain-fall of 0.05, 0.20, 0.50, and 1.00 inch for the present area of London, compared with the area allowed by Mr. Bazalgette, and also the area determined by the Government referees:—

Fall of Rain.	Amount of Water per acre.		Present Area of London, 60 sq. miles, or 38,400 acres.		Area by Mr. Bazalgette, 117½ sq. miles, or 75,251 acres.		Area by the Gov. Referees, 354 sq. miles, or 226,500 acres.	
			Tons.	Gallons.	Tons.	Gallons.	Tons.	Gallons.
0.05	5	= 1,120	192,000	= 43,008,000	376,255	= 84,281,120	1,132,800	= 253,747,200
0.20	20	= 4,480	768,000	= 172,032,000	1,505,020	= 337,124,480	4,531,200	= 1,014,988,800
0.50	50½	= 11,312	1,939,200	= 434,380,800	3,800,175	= 851,239,312	11,441,280	= 2,562,846,720
1.00	101	= 22,624	3,878,400	= 868,761,600	7,600,351	= 1,702,478,624	22,882,560	= 5,125,693,440

In the adoption of any scheme for the drainage of London, we should look forward and consider the probable results some years hence. We are now suffering from the effects of carelessness a few years back, in allowing the water-closets to be connected with the rain-water sewers, and I see no way of applying a remedy but that of re-tracing our steps, and doing now what should have been done about 25 years ago, when water-closets were becoming more general; but probably, at that time, so slowly were these conveniences introduced, that there appeared no warrant for the great expenditure in the construction of separate sewers for the conveyance of the excreta, &c., to the river.

It may be noticed that I am rather departing from the view I took of this subject in my last paper, for I there only insisted on permitting the rain water *occasionally* to flow into the Thames. I confess that having subsequently studied the question more closely, I find there is a positive necessity for doing more than merely separating the rain-fall, if we desire to apply the London sewage to the land. I entirely acquiesce in the remarks made by Mr. F. O. Ward, at the meeting of the Society of Arts, 7th March, 1855, reported in the *Journal*, Vol. 3, page 283. He said—

“He agreed with Mr. Lawes that the grand difficulty in dealing with the sewage of London consisted in its vast, and, above all, in its variable, bulk. The average annual rain-fall in London was about 24 inches, equal to about 2,400 tons per acre. The area drained into the sewers was about 26,613 acres, or nearly 4½ square miles on the north side and 18 miles on the south side of the Thames, together about 59½ square miles, of which about half was suburban. A considerable portion of the rain-fall on the latter was absorbed by the ground, but the greater part of that which fell on the paved surfaces (30 square miles) found its way to the sewers. Calculating from these data, and taking the water supply in round numbers at 50,000,000 gallons a day, it might be said that the total quantities of rain-fall and sewage proper were nearly equal, about 80 or 90 million of tons, but the difference was this, that while the sewage was produced uniformly day by day, the rain, on the contrary, was so variable, that two inches or one-twelfth of the whole amount of rain would sometimes fall in one hour, being equal to more than a month's sewage. On the quarter-inch days, the rain-fall was to the sewage as ¼ to 1; on the half-inch days, ½ to 1; on the inch days, 1 to 1. Now, making all reasonable deductions for evaporation and absorption, it was obvious that the vast and

sudden variations of bulk of rain-fall and sewage tended to make the sewage unmanageable. One day in twelve, the rain-swollen brooks would still rush into the Thames, gorging and overflowing the biggest tunnel you could make, and carrying tons of excrement into the tideway you were seeking to purify. In short, he was led to propound this principle, *the whole of the rain fall due to the river, and the whole of the sewage due to the soil.*

Mr. Alexander Leslie, in page 391 of the report, and other gentlemen, advocate the system of having two sets of pipes from a house, one connected with the water closet only, and the other being the present connection of the sewers with the rain waterpipes, and, I would add, with the sinks of the kitchens also. There are some persons who, while allowing that it is very unfortunate that the water closets have ever been connected with the sewers, still maintain that it is out of the question now to remedy it. They admit that were we dealing with a new city, the most proper course would be to construct two sets of pipes or sewers from each house; but as applicable to London, they exclaim, “the time is past, you cannot make an alteration now! If the plan is objectionable it must be persevered in, let the consequences be what they may.” Now, I would simply ask, do these parties conclude that London has already arrived at its full growth? Is London to stop at its present area of 60 square miles? nearly half of which is considered by some as still suburban? Has not Mr. Bazalgette treated London as though it were double this extent, namely 117 square miles? And, furthermore, have not the Government referees drawn up a plan embracing 354 square miles for drainage? In point of fact, it is as much as to say, because we have adopted a bad system of drainage on one acre of land, we must adhere to it, and persist in carrying it out acre by acre, whatever may be the future area. We thus actually reverse the natural order of things, and compel the greater to be governed by the less.

Similar arguments were heard when railways were first spoken of; people said we had good roads and canals, and the country did not require railroads,—they would never answer here, where so much money was already invested in roads, but in a new country, such as America, railroads should be adopted; and we well know that notwithstanding the excellence of her roads, this country is proud of her railways, which have spread over the land like the veins in the human body. It is a

self evident truth, that when anything new of real worth presents itself to the world, it matters not what has been employed before it was discovered, the improvement will be sought for, and its general adoption will be irresistible. Again, it cannot be assumed that the whole of the cesspools have even now been converted into water-closets. At the meeting of the Society of Arts, March 1855, (before alluded to in the *Journal*, page 323, vol. iii.,) Mr. Bazalgette said "that at that time 100,000 houses, or one-third of the whole number in London, had been drained into the sewers, and that the conversion from cesspool to water-closets was going forward at the rate of 20,000 per annum;" if in March, 1855, the total number of houses in London was 300,000, and 100,000 had then been completed, from that time to the present (three years) add 60,000; total, 160,000, no less than 140,000 houses have yet to be accommodated in this way; nearly half of London it seems is still without water-closets; if this is a fact, who can assert that it is too late to rectify the error.

That which specially perplexes, and is so objectionable in the present schemes for the drainage of London, is that the ratepayers are called on to pay for works of sufficient magnitude to suit the requirement of London when it becomes double the size, or even much beyond this area. Now in the method or plan which I and many others advocate, we should only have to provide for the present area—the present wants of the metropolis; we should only have to remove the offensive excrement of the inhabitants as far as it is now produced; true, it will be a troublesome work, but at all events we should only deal with the nuisance of the area now occupied by London, and not its prospective area.

Mr. Haywood remarked (page 319, vol. iii., *Society of Arts Journal*.) in reference to Mr. Ward's observations, "that most people would desire the dispolluting the large surface water sewers which were formerly, and still are, small tributary streams, so that they might still discharge into the river Thames, and collecting the sewage by other channels, and discharging it wherever it was desired; but, in the metropolis, he feared it could not be accomplished, the scheme involved double sets of sewers and house drains. There were now about 1,000 miles of sewers in London, and 100,000 houses draining into them; the first thing to be done would be to lay 1,000 miles of other sewers, by the side of those already existing, and 100,000 additional house drains in the houses already having drains."

It is well known that the present main sewers are not by any means judiciously laid out, that they have, in a great measure, been constructed piece by piece, as building progressed, without any regular plan; this can be seen by referring to plate 4, Appendix 3 (Report). Mr. Haywood, I believe, is not correct in saying that the new sewers and pipes from the water-closets "will have to run side by side with the existing sewers," for the new sewers should be laid out regularly, according to a systematic plan, which should be prepared or drawn up with due regard to the levels and fall to the locality to which you desire to conduct the sewage, with the great advantage of a good and cheap supply of glazed earthenware pipes, the cost of putting down these extra sewers will not be so very great, as the sectional area of the new pipes need not be a twentieth of the area of the existing sewers.

If London was divided into nine districts (or as many more as would be found necessary), the works could commence in all the districts at the same time. No enormous bodies of soil, saturated with gas, would be turned up and exposed to the air in the streets, neither would there be a stop put to the traffic, as must be the case if extensive excavations are to be made in the thoroughfares of London; indeed, wherever the deep and large intercepting drains are constructed (one 11 miles long and upwards of 30 feet wide), the neighbourhood will not be bearable from the foul exhalations from

the earth; the shopkeepers will be almost rendered bankrupts from the total cessation from business which must ensue while the large works are being constructed. The referees allude to the probability of the temporary stoppage of some of the thoroughfares; the diversion of the traffic, and also to the very large quantities of materials and surplus earth which will have to be carted through the streets.—(Report, page 38.)

Then, again, I submit that the lay or direction of the intercepting main drains, in the present scheme for the London drainage, as far as rain water or other water is concerned, cannot be advantageous, the rain water should be removed by the most direct course. The natural hollow or valley passing through London, is that occupied by the Thames, and the rain water should run direct into the river north and south. Instead of the rain water north of Kensington flowing only a mile and a-half into the Thames at Chelsea, it will be conducted in the large intercepting sewer eight miles through the City, towards Bow and Plaistow, and from thence, by another large drain, 39 feet wide, and 16 feet deep, 24 miles in length, to the Sea Reach; total, 32 miles, instead of under two miles. Of course, as I before remarked, at certain intervals, during heavy rains, the storm overflows will permit the surplus rain water to make a short cut direct to the Thames. The rain-water journey through London will intersect about 115 sewers.—(See Report, p. 185.)

With regard to the objection against any alteration of the sewers, from the difficulty of doing such without interfering with the numerous gas and water pipes, there can be no necessity for such a number of pipes in one street, and I beg to urge upon the Metropolitan Board of Works the great necessity of a stop being put to the unlimited laying down of gas and water pipes, especially the former. In the premiums lately given for the best plan of subways, it could not escape observation that one gas pipe and one water pipe, or not more than two of each, were shown in the drawings exhibited to the public at the Society of Arts, and, certainly, under any circumstances, two gas pipes running through a street should be amply sufficient; but what is the fact? Why in Parliament-street (as shown in the Report) there are eighteen pipes, 12 of which number are gas pipes, 4 water pipes, 1 for the telegraph, and 1 drain, beside the sewer. When we further examine the subject, we find that the Chartered Gas Company own 5 pipes, the Equitable 3, the London 3, and the East Gas Company 1. As to the water works, the Chelsea company have 2 pipes, and the Orange-street works two pipes.

In another example given in the report, namely, Bridge-street, there are 16 pipes, thus, Chartered Gas Company, 4; Equitable Gas, 3; London, 3; East Gas Company, 1; total, 11 gas pipes; Chelsea Water Works, 2, and Orange-street, 2; total, 4 water pipes; and 1 telegraph pipe. Rounding the corner of Cockspur-street, opposite Nos. 13, 14, and 15, there are 9 gas pipes, the Chartered Gas Company having 5, Equitable 3, and the London Gas Company 1, with only 2 water pipes. It appears there are upwards of 30 gas and water mains at Charing-cross.

It cannot therefore be a matter of surprise that the streets are continually rooted up; no subways, I believe, would be required if a restriction was placed on laying down pipes. Surely it cannot be an economical, but a very wasteful expenditure for any company to have 5 gas pipes in one street,—it cannot be necessary, and some arrangement should be made to adopt a system of letting a number of streets or a district by contract, to one Gas Company and one Water Company for a certain period. Instead of 16 pipes threading their course through Parliament-street, two pipes would answer every purpose.

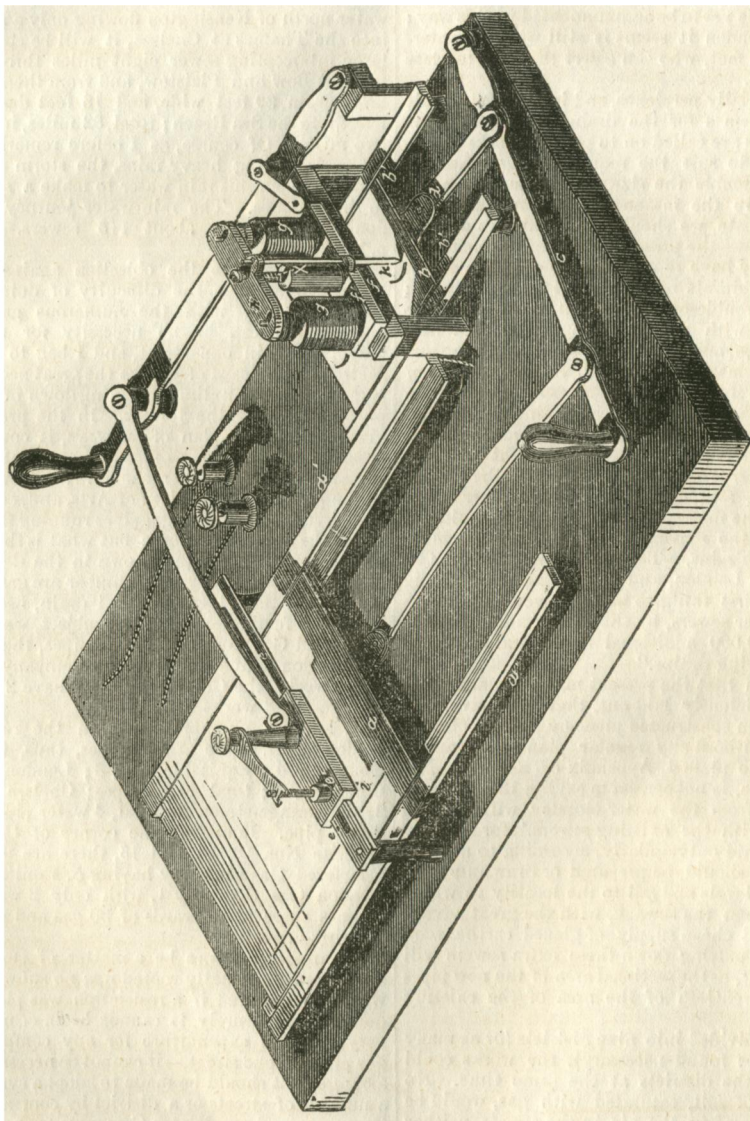
ELECTRO-MAGNETIC ENGRAVING MACHINE.

Under this heading, in Vol. II. of the Society's Journal, pp. 485-6 (June 2, 1854), is given the description of a machine invented by Mr. W. Hansen, of Gotha, for copying and for producing an engraved block for surface-printing. The description is illustrated with an engraving of the machine, and prints from actual specimens produced. Improvements have lately been made in this direction. A patent has been taken out by Mr. R. A. Brooman in this country, on behalf of an American gentleman, under the title of "Improvements in machinery in connection with the employment of electro-magnets for producing copies of designs, drawings, patterns or devices, or for regulating and bringing into action a graver

by breaking and closing an electric circuit in accordance with some previously prepared design or figure."

The following description is taken from the *Mechanics' Magazine* of the 2nd inst. :—

The passage of the design or figure under a "style" effects the breaking and closing of the circuit, and thereby brings into action the graver situated at a distance, but moving in a regulated manner and governed by the action of the style, whereby movements will be imparted to the graver at the moment of the breaking and closing of the circuit. The simplest form of this invention, whereby the general view may be had of its scope and design, is represented in the engraving annexed, and consists in having two metal plates, *a* and *b*, one of which, *a*, is a



conductor of electricity. These plates are placed at a short distance apart, each plate moving in guide frames, *a* and *b*, lying parallel to those of the other. These plates are connected by a lever, *c*, so that a movement of one plate transmits a similar movement to the other along these guides. One of these plates, as *a*, will have

upon it the pattern which is to be copied, and the other, *b*, is the plate intended to be engraved according to the pattern. If the design is to be on a reduced scale, then this latter plate will be moved by a link, *d*, placed near to the fulcrum of the lever, its movements in its guides being reduced accordingly, and *vice versa*; if enlarged,

its link will be arranged to work from the long end of the lever. Centrally placed over the paths of each of these plates are two other sets of guide-rails, *e* and *f*, striding the first-named guides at right angles. That at *e*, over the pattern plate, has a slide into which is fixed a pointed style, *i*, placed vertically, its point resting upon the pattern plate beneath. Upon the guide, over the other plate, is affixed also a slide, *f*, upon which is a helix, *g*, with magnets, and an armature, *h*, placed properly for being actuated in the usual manner of electromagnets. The armature has affixed to it a graving tool, *k*, standing vertically, having its cutting edge when the armature is not in contact with its magnet, just above the surface of the plate to be engraved. The slide, *e*, having the style *i* in it, and the slide *f*, with the magnetic armature, &c., are also connected together by a lever, *l*, so that the movement of one will produce a like movement in the other, or with the proportional differences of motions, if arranged for enlarging or diminishing, as before stated for the plates. A galvanic battery is now put in connection in such way that one pole thereof will be connected to the pattern plate, and the other pole to the style over that plate, so that whenever the style touches the pattern plate, the circuit will be broken, and when passing over any conducting substance on it will be closed. The effect of this upon the graver is to produce a like action, the closing of the circuit bringing the armature, *h*, upon the magnet which brings the graver, *k*, upon the plate *b*. Now, if while the circuit is closed the pattern plate *a* be moved a certain distance, then will a line be engraved upon the plate *b*, in accordance with the extent of its movement. By coating the pattern plate with some non-conducting material, as varnish, and drawing thereon down to the metal any device, a copy may be engraved by moving the plates and style in the following order:—First, bring the style, *i*, to one side of the pattern plate, the graver, *k*, will also thereby be transferred to one side of its plate. When the style, as the plate is being moved, comes into contact with it, the circuit will be immediately closed, and the graver will also be brought to press upon its plate; the pattern plate now being drawn along, a straight line will be engraved upon the plate *b*, until the style on *a* strikes a place varnished, when the circuit will be broken, and the graver will be lifted off its plate during the passage over the varnished surface. On leaving that the circuit will again be closed, and the graving go on again; this interruption taking place as often as a portion of the pattern plate is intercepted during the passing of that plate under the style. The style is to be lifted up, and the pattern plate returned to the first position, then the style moved the distance across for a next line, and the operation repeated. Thus, the whole plate will be gone over in parallel lines, and the plate *b* in like parallel lines, whereby in those places in which the circuit has been broken by the figures, this plate will accordingly have been engraved in fac-simile if the movements of the two plates have been alike, or will be enlarged or diminished, if actuated as already stated.

Instead of operating the graver directly by the armature and magnet, the inventor proposes various modifications in which this may be accomplished, by the armature setting in operation some suitable machinery according to the breaking and closing of the circuits by the pattern. The use of the invention may also be extended to carving, weaving, etc.

SOCIETY OF ARTS AND OXFORD EXAMINATIONS.

As the Council of the Society of Arts, "with the view of assisting to bring the proposed title of 'Associate in Arts of Oxford' within the reach

of the members of Institutes in union with this Society," have notified that they "will grant to each youth, not less than 16 or more than 18 years of age, who shall obtain, in 1858, three of the Society's certificates of the first class in the subjects contained in the Oxford programme, the sum of £5 towards his expenses, if he attends at the University and undergoes the Examination there," it is thought useful to publish, for the guidance of the members of Institutes in Union, those portions of the Oxford regulations to which the offer of the Council has reference.

EXAMINATION FOR THE YEAR 1858.

The Examination will commence on Monday, the 21st of June, 1858.

Examination of Candidates for the Title of Associate in Arts.

Candidates must be under eighteen years of age on the day when the Examination begins.

I. All candidates at this Examination will be required to satisfy the Examiners in

1. Analysis of English sentences and parsing, and correction of faulty sentences.
2. A short English composition.
3. Arithmetic.
4. Geography.

Every candidate will be required to draw from memory an outline map of some country in Europe to be named by the Examiners, showing the boundary lines, the chief ranges of mountains, the chief rivers, and the chief towns. Questions will also be set in Geography.

The outlines of English History: that is, the succession of Sovereigns, the chief events, and the characters of the leading men in each reign.

*II. The Examination in the Rudiments of Faith and Religion will consist of questions in

1. The Historical Scriptures of the Old Testament to the Death of Solomon.
2. The Gospels of St. Matthew and St. John, and the Acts of the Apostles.

Those who offer themselves for examination in Greek will be expected to answer questions on the same parts of the Greek Testament.

3. The Catechism, the Morning and Evening Services, and the Litany; and the outlines of the History of the Book of Common Prayer.

III. Every Candidate will also be required to satisfy the Examiners in two at least of the Sections marked A, B, C, D, or in one of those four and in one of those marked E, F.

SECTION A.—*English.*

This will include questions in

1. English History, from the battle of Bosworth Field to the Restoration; and the outlines of the History of English Literature during the same period.
2. Shakspeare's King Lear, and Bacon's Essays.
3. The outlines of Political Economy and English Law.

The Examination will not extend beyond the subjects treated of in the first book of Smith's Wealth of Nations, and the first volume of Blackstone's Commentaries.

4. Physical, Political, and Commercial Geography. A fair knowledge of one of these four classes of subjects will enable a candidate to pass in this section.

SECTION B.—*Languages.*

1. Latin. 2. Greek. 3. French. 4. German.

* This Examination will not be required of any Candidate whose parents or guardians shall have declined it on his behalf.

A fair knowledge of one of these languages will enable a Candidate to pass in this Section.

SECTION C.—*Mathematics.*

1. Pure Mathematics.
2. Practical Mechanics (including Mechanism) and Hydrostatics mathematically treated, Surveying, and Navigation.

Algebra to the end of Quadratic Equations and Four Books of Euclid will enable a Candidate to pass in this Section.

SECTION D.—*Physics.*

1. Natural Philosophy.
Great importance will be attached to good Mechanical drawing.
2. Chemistry.
Questions will be set on the facts and general principles of Chemical Science.
There will be a practical examination in the elements of Analysis.
3. Vegetable and Animal Physiology.
Questions will be set on Vegetable Physiology in general, and on the functions of Vertebrata in Animal Physiology.

Parts of plants and bones of Vertebrata will be given for description.

Great importance will be attached to good Botanical and Anatomical drawing.

A fair knowledge of one of these classes of subjects will enable a candidate to pass in this section; but in all cases a practical acquaintance with the subject-matter will be indispensable.

SECTION E.—*Drawing and Architecture.*

1. Drawing from the Flat, from Models, from Memory, and in Perspective; and Drawing of Plans, Sections, and Elevations.
2. Design in pen-and-ink, and in colour.
3. The History and Principles of the Arts of Design.
A fair degree of skill in free-hand drawing will be required in order that a candidate may pass in this section.

SECTION F.—*Music.*

1. The Grammar of Music.
 2. The History and Principles of Musical Composition.
- The Elements of Thorough Bass will be required in order that a Candidate may pass in this section.

Separate lists of those who distinguish themselves will be published for each of the Sections A, B, C, D, E, F, arranged in two divisions.

The names in each first division will be arranged in order of merit; those in each second division alphabetically.

The names of other successful candidates will be printed in a general alphabetical list.

After each successful Candidate's name will be inserted his age, the place of his residence, and the school (if any) from which he comes to attend the Examination.

Every candidate who passes will receive the Vice-Chancellor's Certificate conferring the title of Associate in Arts, and specifying the subjects in which he has satisfied the Examiners.

The fact that a candidate has passed the Examination in the Rudiments of Faith and Religion will be entered on his certificate, although it will not affect his place on the list.

Place of Examination.

The Examination will be held in Oxford, and simultaneously in other places, if it be requested and found expedient.

Local committees wishing to have an Examination in their several districts may obtain all necessary information from the Rev. J. E. Sewell, New College, Oxford.

Time of Applying.

Candidates desirous of being examined at Oxford must apply on or before the tenth of April, 1858.

Local committees desirous of having Examinations held in their several districts must apply on or before the 1st of March, 1858, specifying the probable number of their candidates.

The names of these candidates must be transmitted to the Rev. J. E. Sewell on or before the tenth of April, 1858.

Fees.

Every candidate will be required to pay a fee of 30s. These fees must be paid on or before the 10th of April, 1858.

SOUTH KENSINGTON MUSEUM.

Christmas Holidays :—Morning, 14,343; Evening, 9,168. Total, 23,511.

Home Correspondence.

THE APPLICATION OF THE SEWAGE OF TOWNS TO AGRICULTURE.

Sir,—In the *Journal* of the 11th December appears a letter from Mr. Edwin Chadwick, accusing M. Barral of very "serious misrepresentations," of "intrinsic ignorance," &c., &c. Mr. Chadwick speaks as if he were replying to a short extract from the *Journal d'Agriculture Pratique*, which was translated into *Bell's Weekly Messenger*, and copied into your columns in September last.

Permit me, in the first place, to state that Mons. Barral, whom Mr. Chadwick treats in so contemptuous a tone, speaks on all scientific agricultural questions with authority. He was the official reporter of the Imperial Government at the Agricultural Department of the Great French Exhibition of 1855, thus occupying the same position as the late Mr. Pusey, President of the Royal Agricultural Society, did in England in 1851. Let me further say, that the *Agricultural Magazine* which he edits is certainly second to no periodical on the same subject in any language—that the most eminent agriculturists in France contribute to its pages. As to Mons. Barral's personal character, he is well known to most of those Englishmen who took an active part in the last two French Agricultural Exhibitions in Paris, as a most able, exact, painstaking, conscientious man, entirely devoted to the cause of scientific truth, remarkable, too, for having always kept aloof from commercial speculation of any kind.

Mons. Moll, the French Commissioner, is one of the contributors to the *Journal d'Agriculture Pratique*, and he has published in it statements of the profits to be derived from the use of liquid manure and sewage manure, in which he has taken nearly all his facts and figures from the publications of the late Board of Health; for Mons. Barral's journal is impartially open to the free discussion of every agricultural question.

Mons. Barral, accompanied by Mons. de Guaita (who having passed two years in a Lincolnshire farm as an amateur, speaks English perfectly), came over to the Royal Agricultural Society's show at Salisbury, in July last, and then, having previously accepted as correct the statements as to the profitable value of sewage manure and liquid manure, made by Mr. Chadwick, Mr. Ward, and their translators, proceeded on a visit to the principal liquid manure farms of Scotland and England. Of these visits he has published exact detailed reports in his *Journal* of the 20th August, 20th September, and the 5th of October, 1857, illustrated with woodcuts, to which I call the attention of those interested in the liquid manure and sewage manure questions. The following brief account of their mode of preparation and

contents of these reports, will show how very unlikely Mons. Barral was to make any mistake, and how impossible it is that the mistakes, if any (which I deny), were intentional. Mons. Barral begins by "translating literally the passage devoted to Canning-park farm, from a report published by the Board of Health, dated 31st December, 1851," and he observes, "it is evidently from this official report that Mons. Moll and Dr. Harsteen have derived the greater number of the details as to Canning-park, as may be seen by reference to the *Journal d'Agriculture Pratique*, 20th July, 1852, and 20th February, 1857." He then proceeds, "We will now compare the preceding text with the literal account (*procès verbal*) of the visit which, in company with Mons. de Guaita, we made to Canning-park on the 7th August, 1857. This *procès verbal* was drawn up the same evening, with no other information before us than the notes taken during our conversation with Mr. Telfer, who most obligingly gave us all the details in answer to our questions on his curious mode of cultivation." "Mons. de Guaita," he adds, "testifies to the exactness of the following *procès verbal*." Then follows a most minute and interesting description in detail of every part of the management of the Canning-park dairy farm (for which I refer your readers to the original work in French); and the report terminates with the general conclusions, which have already appeared in your *Journal*, with some further comments from the editor of *Bell's Messenger*, which called forth Mr. Chadwick's letter.

Mr. Chadwick admits that Mr. Telfer *does use the large amount of artificial manure* described in Mons. Barral's report, to produce the great crops described in the Board of Health blue-book, but he states that as Mr. Telfer is a manure merchant, he is inclined to exalt the "powers of the manures he could sell, at the expense of those he could not sell." I am content to leave that argument, for what it is worth, to the consideration of your readers.

Mr. Chadwick also complains that M. Barral quotes from the report of Mr. Lee, and not from that of the Board. This is a strange objection. Mr. Lee was one of the inspecting engineers of the Board of Health, specially deputed to report to the Board on a number of liquid manure farms. At page 448 of the 3rd vol. *Journal of the Society of Arts*, you will find Mr. Chadwick quoting Mr. Lee's tabular statement of the cost of laying down pipes and pumps, in support of the tubular system of liquid manuring against the water-meadow system now adopted by Mr. Austen, the present engineer of the New Board of Health; and at page 498 of the same volume, answers, showing that not one farm described by Mr. Lee produced a profit.

Mr. Chadwick then proceeds to protest against Mons. Barral terming Myer Mill Farm, lately managed by Mr. James Kennedy, for his cousin Mr. P. W. Kennedy, the manager of a branch of the Royal Bank of Scotland, "the ruined farm of Myer Mill." At any rate, if Mons. Barral was wrong, he was misled by the universal evidence of all Mr. Kennedy's neighbours, and of Mr. James Kennedy himself, who admitted, two years ago, to one of the most distinguished Aberdeenshire farmers, whom I will name if pressed, that *the farm never did pay*. I am a bad hand at writing the Scotch dialect, but the words of James Kennedy's mother, in my note book, taken down in Paris, during the Agricultural Exhibition, from my Scotch friend, were as nearly as possible these:—"Jemmy, ye may as weel tell the honest man the truth, its a sad bargain the farm." The *Agricultural Gazette*, conducted by one of our ablest agricultural writers, Mr. J. C. Morton, not only stated, at least a year ago, the failure of the Myer Mill farm, but accounted for it by the too great extension of the pipe system. M. Barral, many months later, visited the farm, and found the costly pumping apparatus silent. Mr. Chadwick follows later still. The pumps were still silent. You may remember, on

the discussion of Mr. Fothergill Cook's paper, I stated that the farm was vacant. Is it at work now, or are the boilers still under repair? The tenant or manager has gone south. None of these facts are consistent with success, and yet Mr. Kennedy, the banker, is not unnaturally indignant that his hobby should be termed a failure. Now, Mr. J. C. Morton read a paper at our Central Farmers' Club, in March, 1851, describing these two farms, for the purpose of drawing attention specially to the use of liquid manure in growing Italian rye grass, which is certainly the most profitable use to which that form of manure can be applied. In this paper, Mr. Morton gives an account of Mr. Telfer's farm, which is substantially the same as that given by Mons. Barral, as will be seen in the following extract from the Report circulated among the members of the club:—

"Immediately after cutting the rye-grass, between 3 and 4 cwt. per acre of mixed Peruvian guano and sulphate of ammonia are sown upon it, and one inch, or 100 tons per acre of ley water are poured through pipes, containing such share of the liquid excrement of 48 cattle as belongs to the period since the last pumping. Mr. Telfer lets the water on direct from the pipes to the land; he does not send it flying in a stream through 40 or 50 yards of dry air, which would run off with half its excellence, but he sends it directly to the roots of the plants. Three cuttings up to October, each followed by a washing-in of artificial manure, to the extent of from 3 to 4 cwt. per acre, so that "during the two years that will have yielded 100 tons of green food per acre, in seven cuttings, by the use of a ton of guano, sulphate of ammonia, and nitrate of soda, washed in with a hundred tons of dilute liquid." Nothing about wheat here!

In describing Mr. Kennedy's farm, Myer Mill, Mr. Morton mentions that he purchased from 800 to 1,000 gallons of gas-water (ammoniacal liquor), at 6d. per gallon, and applied it with the liquid of 150 cattle and the manure of 450 sheep, kept on boards, to 84 acres of Italian rye-grass, out of 900 imperial acres, 420 of which were under the system of under-ground irrigation. "Seven thousand cubic yards of solid manure used for the arable crops."

But I have another piece of evidence about Mr. Kennedy's farm, from the "*Troisième Voyage Agricole en Angleterre et Ecosse*," par le Comte Conrad de Gourcy, which took place in 1851, and was published in 1855. He says, at page 176, "La fameuse ferme de Myer Mill appartient à M. Kennedy. Celui-ci l'a loué à une personne portant le même nom, ayant le goût des expériences et faisant faire des travaux immenses dans cette ferme, mais M. Kennedy a assuré le fermier que si ses améliorations n'étaient pas profitables, il n'en souffrirait pas."

Now, as Mr. Kennedy the banker was to bear all the risk of Mr. Kennedy the farmer, it is not difficult to understand that the next tenant might, as Mr. Chadwick states, pay double rent, and yet not pay a heavy rent.

I think I have given above conclusive evidence that Mons. Barral has made no misrepresentation in his description of the liquid manure farms. He read, in the works of the Board of Health, and in the papers read by Mr. Chadwick and Mr. Ward, at Brussels, of extraordinary things done with liquid manure and liquid sewage; he came, saw, and questioned, and found the only brilliant results in artificial grass crops obtained by the liberal use of guano and other expensive substitutes. He found no crops of wheat grown with liquid manure; he looked in vain for forty bushels an acre from the sewage of Rugby, or twenty bushels, or even ten. So he wrote down what he saw, and I confess that his exact matter of fact detailed statements, printed, as they are, side by side with the Board of Health Reports, are very provoking.

As to Rugby, it is true, as Mr. Chadwick stated, that Mr. Campbell, under his lease, pays a heavy rent to Mr. Walker for part of the sewage of Rugby, but it is also

true that Mr. Campbell declares, "that the people of that town use so much water that the stuff is perfectly worthless; that he is very much disappointed with his bargain, and is obliged to strengthen his liquor with a large quantity of purchased manure and gas water."

Mr. Chadwick talks of Mons. Barral's "intrinsic ignorance." I ask your readers to compare the reports of the *Journal d'Agriculture Pratique* with the papers of the Board of Health, and the letters of Mr. Chadwick, and then decide on which side lies the balance of testimony as to the profitableness of using liquid sewage manure; for on the *profitableness* the whole question turns.

On the remarks about the circumstances that led to the fall and re-construction of the Board of Health, it is not necessary to say anything in this, a scientific journal, except that the printed evidence with respect to Southampton bears out all that Mons. Barral asserts as to the unpopularity of that Board *after* the works executed by its engineers were at work.

One word more. Mr. Chadwick assumes that all those who, like myself and my friend Mons. Barral, differ with him as to the profitableness of liquid sewage manure, and as to the policy of expending vast sums for its distribution, all those who consider that in this climate the application of liquid manure of any kind must be limited, as it is in Italy, to grass crops (rice excepted), are not only stupidly blinded by "indolence and pride," but "obstructors of labours directed to the prevention or mitigation of some of the heaviest inflictions on mankind." But this is begging the whole question. The projectors of the last flying machine, the promoters of that terrible failure, the atmospheric railway, the devotees of a great man who put faith in a steam coach for common roads, all argued in the same style. My friends, agricultural and engineering, are as desirous of promoting the progress of agriculture, and the thorough cleansing of towns from sewage, as Mr. Chadwick.

I am, &c.,

S. SIDNEY.

Central Farmers' Club.

P.S.—Since writing the preceding, I have received a letter from Mr. B. Congreve, the tenant, *on lease*, of the Rugby sewage farm, in which he says, "I am more and more convinced that sewage is of *no use* upon arable land; in fact, in its present state, it is a positive injury."

LORD PALMERSTON'S MORTAR.

SIR,—The partial failure of this colossal mass of wrought-iron staves and hoops must be my excuse for requesting the favour of a small space for the following statement.

In January, 1855, when our guns and mortars were bursting daily in the Baltic, and at the memorable siege of Sebastopol, as well as at the experimental trials in the marshes, I had the honour of laying a plan before the War Department for the construction of what may be fairly called indestructible ordnance, and was referred by that department to the "Ordnance Select Committee" at Woolwich.

I attended upon that committee and explained the plan, which was to construct all large ordnance with a soft steel spiral bore, of sufficient strength to resist the explosion, upon which should be cast a metal jacket of brass or iron, in order to give mass and weight to resist recoil. I also explained the method of readily forming and welding the spiral coil for the bore, and showed that such ordnance could be made as quickly, and nearly at the same cost, as those in ordinary use, as well as that such ordnance would present the same form, dimensions, and weight, and would be equally adapted for every species of projectile.

The "Select Committee" were prevented by their regulations from acceding to my proposal, viz., to con-

struct a small piece of ordnance on my plan in the Royal Arsenal, with the means and appliances then at the disposal of the Select Committee, free of any charge for my personal superintendence, and they also refused to accept a small experimental model such as my own resources might enable me to construct, and they further decided that they could not entertain my plan unless I produced for the purpose of experiment a full-sized 68-pounder at my own cost and charge, a condition with which of course I was unable to comply. At the same time the Select Committee also required me to make a declaration renouncing any claim for fee or reward in the event of a successful result.

A writer in the *Times* of Monday, the 21st ult., under the head of "Mortars and Mortars," is perfectly correct in denouncing all monster masses of wrought iron, as forged by means now at our command, as monster failures. What proportion does the largest steam-hammer bear to a monster gun, compared with that of a blacksmith's hand-hammer in forging a tennypenny nail? Besides this, all structures consisting of a system of staves and hoops, however ingeniously put together, must derive their whole strength from the hoops alone, and none whatever from the staves, which merely form a useless load of iron.

I am, &c.,
HENRY W. REVELEY.

Poole, January 2nd, 1858.

Proceedings of Institutions.

HOBART TOWN, (NEW SOUTH WALES).—The secretary of the Mechanics' Institution, in a letter lately received, says:—"Our Institution is progressing favourably, in spite of the great depression of trade here. We have about 400 members. A chemistry class is in operation, and is attended regularly by 35 members. A singing class is also being conducted with success."

HOLBECK, NEAR LEEDS.—On Thursday, the 17th of December, 1857, the Rev. J. H. F. Kendall delivered an extempore lecture at the Church Institute, "On the Atmosphere." The lecturer confined his remarks to the mechanical properties of the atmosphere, and made several experiments to illustrate his subject. The lecture was of an interesting and practical character. The audience, composed almost exclusively of working people, paid marked attention to all that was stated by the lecturer. Mr. Kendall has undertaken to deliver a second lecture, on the different gases which enter into the composition of atmospheric air.

LIVERPOOL.—On Thursday morning, the 22nd of October, a meeting of the life governors, directors, and other friends of the Collegiate Institution was held in the lecture hall, to celebrate the "Founders' day." On the platform were the following, amongst other gentlemen:—The Right Hon. W. E. Gladstone, M.P.; Wm. Brown, Esq., M.P.; Pudsey Dawson, Esq., of Hornby Castle; Rev. Dr. McNeile, Venerable Archdeacon Jones, Rev. J. H. Jones, J. Jones, jun., Rev. Mr. Appleton, Rev. C. W. Lawrence, Rev. J. King, Rev. D. Anderson, Rev. J. Stewart, E. Jones, Esq., &c. The Rev. J. S. Howson delivered an address, in which he stated that the foundation stone of the building was laid on the 22nd day of October, 1840. Many of those who combined to establish the Institution were happily surviving to see their wishes, or at least a great part of their wishes, accomplished, though they had to mourn the loss of some who would have sympathised with them in this anniversary. Mr. Howson enlarged upon the history, objects, and influence of the Institution, and was followed by the Right Hon. W. E. Gladstone, M.P., who spoke at some length, expressing the cordial interest he felt in the welfare of the Institution.

OXFORD FREE LIBRARY.—Some interesting statistics of the Oxford Free Library, prepared by Mr. Dewe, the librarian, have just been issued for the quarter ending Nov. 30, 1857. The results are generally of a satisfactory character, and show a great increase over the preceding summer quarters, both in the number of visitors and readers. The number of daily visitors for the quarter is 32,325; total number of book readers 5,860, of which 3,822 were novels and tales; 1,135 poetry, the drama, and miscellaneous literature; 491 history, travels, and biography; and 412 theology, philosophy, science, and art. The average number of daily visitors during the quarter was 403; daily book readers, 64; and Sunday evening visitors 70. The library now contains 4,550 volumes. A separate statement has also been issued, showing the operation of the lending library for the month of November. The total number of volumes in this department is 1,025, and the estimated number of borrowers' cards issued 191. 29* persons have applied for books, and 297 volumes have been issued, of which 270 were novels and tales; 59 poetry, the drama, and miscellaneous literature; 59 history, travels, and biography; and 9 theology, science, &c.

POOLE.—On Tuesday evening, Nov. 24th, Mr. Joseph Darby, of Lytchett, gave a lecture at the Town-hall, in connection with the Mechanics' Institute, on the "Works of Charles Dickens, their Moral and Social Influences." Mr. Darby gave a lecture on this subject last year, and the present lecture was a continuation of the review of Dickens' writings. The chair was occupied by Mr. W. Mate.

YARMOUTH.—The fourth annual report of the Parochial Library and Museum shows that the increase in the number of members is very satisfactory. In the year ending October, 1856, there were 320; there are at present 470, the increase for the past year being 150. The balance-sheet shows, in consequence, a rise in the subscriptions to the library, from £28 12s., the amount received in 1856, to £42 13s. 9d., the receipts for the past year. This may be attributed partly to the effects of the early closing movement, partly to the attractiveness of the lectures and musical evenings, and partly to the festival held at the Christmas anniversary. The library now numbers 2,772 volumes, showing an increase of 149 during the year. The state of the finances authorises the Committee to recommend that a further sum be at once laid out in the purchase of books. The issue of books to subscribers has been 6,635; and including the book-club circulation of 4,120, we obtain a total of 10,755 books issued. Books of reference and other works have been extensively used in the reading-room. The following are the number of volumes of each class of books circulated during the year:—Arts, science, trades, manufactures, 170; anatomy, 9; biography, 280; dictionaries, encyclopædias, 14; education, 24; fiction, 1,320; geography, 870; geometry, 7; history, 578; literature, 109; miscellaneous, 155; natural history, 100; periodicals, 580; poetry, 135; political economy, 71; physical science, 80; theology, 485; juvenile library, 1,648; total, 6,635. 7,750 has been the total attendance at the reading-room, being an average of twenty-five a night, and the committee foresee that they will shortly have to turn their attention to increased accommodation. To meet the wishes of many of the members, the book-club has been divided into two branches, the one circulating books weekly, the other fortnightly. The number of subscribers are, to the weekly, 72; to the fortnightly, 21; total, 93. The lectures were, for the most part, delivered gratuitously, and the attendance has proved how much they were appreciated, not only by the members, but by the residents generally. The lecture session commenced on the 30th September, 1856, and closed May 5th, 1857, during which the following were delivered:—Sept. 30, 1856, "Early Closing: Time and the Kalendar" (dissolving views), Rev. G. Hills, B.D.; Oct. 14, "British Navy" (dia-

grams), Rev. G. Fellow, B.A.; Oct. 28, "Paris" (dissolving views), Rev. N. T. Garry, M.A.; Nov. 11, "How we Breathe, What we Breathe, Why we Breathe" (diagrams), Rev. A. H. Locock, M.A.; Nov. 20, Musical Evening, conducted by Mr. H. Stonex; Nov. 25, "Nineveh" Part I. (diagrams), Rev. T. Hammond Tooke, M.A.; Nov. 27, ditto, Part II.; Dec. 9, "The Templars" (dissolving views), Rev. E. Yates, M.A.; Dec. 23, "Curiosities of Insect Life" (diagrams), E. Wheeler, Esq., C.E.; Jan. 20, 1857, "The Late War in the Crimea," Rev. H. P. Wright, M.A.; Feb. 3, "Venice" (dissolving views), R. H. I. Palgrave, Esq.; Feb. 12, Musical Evening, conducted by Mr. H. Stonex; Feb. 17, "Olives and Maccaroni," Rev. M. Mitchell, M.A.; March 8, "Ancient and Modern Rome" (diagrams), Rev. H. Dupuis, B.D.; March 17, "The House we Live in, and how to take care of it" (diagrams), Rev. M. H. Beaumont, M.A.; March 31, "Holy Places" (dissolving views), Rev. G. Hills, B.D.; April 14, "The Highlands of Scotland" (dissolving views), Rev. Dacres Olivier, M.A.; April 21, the same repeated; April 28, "Cairo and the Pyramids" (dissolving views), Rev. G. Hills, B.D.; May 5, the same repeated. Every year adds something to the interest of the museum; the branch of it which is best represented is ornithology. The whole collection of specimens have been classified and arranged as much as possible during the past year. With reference to the evening classes, free instruction has been given as usual in reading, writing, and arithmetic, to adults of the working classes. The school opened on the 3rd October, 1856, and closed 1st May, 1857. The average attendance was 29, and the total number of those who availed themselves of it was 89. Classes were opened last year on the following subjects:—Ecclesiastical History, English History and Literature, English Composition and Writing from Dictation, French, Latin and Roman History, Mathematics, the Elements of Navigation, Vocal Music, and Short Hand. The Committee hope ere long that some of the members may be found sufficiently advanced to attend the Examinations of the Society of Arts with good hope of success. Meanwhile, the Committee offer prizes in each class. The attendance at the French class was, male class, 15; female class, 8. For the mathematical class 28, for the music class 31 names were entered. The Mutual Improvement Society has been revived, under the care of a sub-committee; its operations will extend to debates on given subjects, rehearsal of speeches from the best English authors, essays on given subjects, and the like. As an additional stimulus to mental cultivation, the Committee offer a prize of £2 for the best, and £1 for the second-best essay, to be competed for by clerks in offices, and assistants in shops, whether members or not of the Institution. In consequence of a resolution passed at the last annual meeting, a Committee was formed to put in practice, as far as possible, the principles of early closing. The Committee named, met with a success which had never attended any similar attempt in former years. The drapers, grocers, stationers, almost unanimously, and some others, closed their shops at 7 o'clock, from November to April. It will be the earnest endeavour of the Early Closing Committee to re-establish and extend the benefits of this important movement during the approaching winter, A Christmas Exhibition and Entertainment was given with great success. The programme of the entertainment promised fifteen lectures; four or five of these were given each morning and evening, in order that visitors, either in the morning or evening, might hear the whole course, and yet have time to examine the exhibition. The collection of pictures included specimens of many of the best masters. The best thanks of the Committee, and indeed of every visitor, are due to all contributors to this manifold entertainment, and to all who assisted in the arrangements.

Miscellaneous.

VACCINE LYMPH IN GLYCERINE.—Dr. Andrews, of Chicago, has made some successful experiments in the preservation of vaccine virus by solution in glycerine, using the solution instead of the solid matter. The solution was kept for two or three months in warm weather, when seven cases were vaccinated without a single failure. The scab should be broken into three or four pieces, and thrown into a little glycerine, which is to be occasionally shaken; it dissolves slowly without other care.—*Amer. Journ. of Med. Science*, Oct., p. 561.

MEETINGS FOR THE ENSUING WEEK.

- MON.** Society of Arts, 6. Conference of the Representatives of the Metropolitan Institutions.
 Architects, 8. I. Mr. M. Digby Wyatt, "A few Notes on the Crannoges or ancient Lake Castles of Ireland." II. Mr. Gordon M. Hills, "A Review of the Architecture and History of the Round Towers of Ireland."
 Geographical, 8½. I. Lieut.-Col. Waugh, "On Mount Everest and Deodhanga." II. M. Pecherof, "Description of the Amur River, in Eastern Asia." III. Report of the Expedition up the Niger under Dr. Baikie and D. J. May, Esq., R.N., &c.
TUES. Syro-Egyptian, 7½. The Rev. Dr. Hewlett, "On the Natural History of Egypt."
 Civil Engineers, 8. I. Mr. Locke, M.P., President, "Address on taking the chair." II. Mons. Guérin, "On Railway Brakes."
 Med. and Chirurg., 8½.
 Zoological, 9.
WED. Literary Fund, 3.
 Society of Arts, 8. Mr. J. Baily Denton, "On the Advantages of a Daily Register of the Rain-fall throughout the United Kingdom, and the best means of obtaining it."
 Graphic, 8.
 Microscopical, 8.
 Archaeological Association, 8½.
THURS. Royal Society Club, 6.
 Antiquaries, 8.
 Royal, 8½.
SAT. Asiatic, 2.
 Medical, 8.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, Jan. 1, 1858.]

Dated 19th October, 1857.

2666. Jean Schmidt, Essex-street, Strand—An improved method of making tyres for railway wheels.

Dated 3rd November, 1857.

2786. Peter Armand le Comte de Fontainemoreau, Paris, London, and Brussels—Improvements in marine or condensing steam engines. (A communication.)

Dated 10th December, 1857.

3050. Richard Reeves Cox, Kentish town—Improvements in the manufacture of fire lighters, and in apparatus or stoves for burning the same.

Dated 11th December, 1857.

3056. John Gedge, 4, Wellington-street South, Strand—Improvements in the process of rectifying liquids, and in the apparatus used therewith. (A communication.)

Dated 16th December, 1857.

3086. John Francis Seeley, Everett-street, Brunswick-square—An improved machine or apparatus for cutting out materials used in the manufacture of boots, shoes, and other coverings for the feet.
 3090. Matthew Semple, Stonehouse, Devon—Improvements in preserving meat, fruit, vegetables, and other edible substances and fluids.

3092. Henry Gregory, Manchester—Certain improvements in machinery or apparatus for making "lozenges," or other similar articles.

3094. Dr. James Joseph Cregeen, Plough-road, Rotherhithe—Improvements in the treatment of India and China grass, pine apple, hemp, flax, and other similar fibrous materials, and in the machinery or apparatus employed therein.

Dated 17th December, 1857.

3098. John James Davis, Percival-street, Clerkenwell—Improvements in presses for printing or endorsing and embossing.
 3102. Henry Johnson, Crutched-friars—Improvements in apparatus for drawing geometric curves.
 3104. William Woofe, Tetbury, Gloucestershire—Improvements in ploughs.
 3106. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in machinery or apparatus for hulling cotton and other oleaginous seeds, applicable also to the hulling of cereals. (A communication.)

Dated 18th December, 1857.

3108. John Horace Taylor and Robert Tate Barrett, Victoria Dock-road, Essex—Improvements in apparatus for the prevention of smoke, and for effecting a better consumption of fuel in steam-boiler furnaces.
 3110. Thomas Coxon Wilkinson, Ashford, Kent—Improvements in pump valves.

INVENTION WITH COMPLETE SPECIFICATION FILED.

3175. James Cottrill, Studley, Warwick—Improvements in the manufacture of certain descriptions of needles.

WEEKLY LIST OF PATENTS SEALED.

January 1st.

- | | |
|---|---|
| 871. John James Russell. | 2021. M. Clark and G. Bertram. |
| 1834. Carl Johann Lawrence Leffer. | 2056. Robert Jackson. |
| 1835. William Edward Newton. | 2270. John Henry Christian Lobnitz and James McLintock Henderson. |
| 1839. Edouard Beckman Olofson. | 2377. Isidore Charles Cloet. |
| 1846. George Davies. | 2323. Adrien Jules Alexis Dumoulin. |
| 1848. Tomyns Browne. | 2401. Alphonse René Le Mire de Normandy and Edward Thornhill Simpson. |
| 1852. Jean Baptiste Meeus. | 2503. John Charles Pearce. |
| 1859. Henry D. Mears and William Houlton. | 2561. Conrad William Finzel and James Bryant. |
| 1861. William Thomas Hendry and Robert H. Hancock. | January 5th. |
| 1863. Thomas Roids, Thos. Roscow, and James Lord. | 1874. Charles Faulkner and David Faulkner. |
| 1867. George Cooper. | 1889. William Burgess. |
| 1870. John Smith. | 1894. George Green. |
| 1883. Peter Hippolyte Gustave Bérard. | 1897. Joseph Gibbs. |
| 1884. Peter Hippolyte Gustave Bérard. | 1906. John Holley Swan. |
| 1886. William Smith. | 1908. John Julius Cléro de Clerville. |
| 1888. Rd. Archibald Brooman. | 1912. William Mann. |
| 1891. Michael Henry. | 1919. Isaac Louis Pulvermacher. |
| 1896. Jules Joseph Henri Briançon. | 1921. Sir Frs. Charles Knowles. |
| 1914. Thomas Lewis, Henry Parrish, and Robert Martin Roberts. | 1922. Rd. Archibald Brooman. |
| 1933. Datus Ensign Rugg. | 1931. Edouard Primard. |
| 1938. Hippolyte Lamy. | 1932. William John Thos. Smith and Frederick Talbot. |
| 1946. William Edward Newton. | 1981. Joseph Russell, Henry Wm. Spratt, and Wm. Press. |
| 1947. William Edward Newton. | 1992. George James Wainwright and Chas. Timothy Bradbury. |
| 1950. Samuel Nye. | 1998. Frederick Hall Holmes. |
| 1969. John Henry Johnson. | 2016. Alfred Vincent Newton. |
| 1970. Henry Blandford. | 2090. John Beale. |
| 1971. John Henry Johnson. | 2531. Peter Kerr. |
| 1994. William Edward Newton. | 2553. James Stevenson, jun. |
| 1997. George John Newbery. | |
| 2003. William Edward Newton. | |

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

December 28th.

2761. Thomas Slater and Joseph Tall.

December 29th.

2759. George Edward Dering.
 2760. Robert Sam North.

January 1st.

25. George Walker Muir.

January 2nd.

10. Claude Jules Fincken.
 21. Alexander S. Stocker and Samuel Darling.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address.
4040	Jan. 4.	Expanding Bar for Chain Harrows	John Cartwright	Shrewsbury.
4041	" 5.	A Paper File	John Faulkner	62, St. Martin's-le-Grand.
4042	" 6.	Salmons' Calosynthetic Stereoscope	Wm. John Salmons	100, Fenchurch-street.